

# A new species of *Hoplophorella* (Acari, Cryptostigmata) from Java

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## Introduction

As part of a survey of the world oribatid fauna, Dr Marie Hammer made a collection of soil and litter-dwelling oribatids on Java in 1974. Details of the localities examined and descriptions of the aptychoid species identified were subsequently published (Hammer, 1980), while the euptyctimoid mites were kindly sent to the author for examination. *Phthiracarus anonymum* Grandjean, *Phthiracarus tardus* Forsslund, *Steganacarus striculus* (C. L. Koch), *Rhysotritia ardua* (C. L. Koch) and *Microtritia tropica* Märkel were identified, as well as two specimens of an undescribed species of the genus *Hoplophorella* Berlese, characterized by the presence of spatulate and strongly serrated notogastral setae. A detailed description of this mite is given below. The holotype is deposited in the collections of the Zoological Museum of the University of Copenhagen and the paratype in the British Museum (Natural History), London.

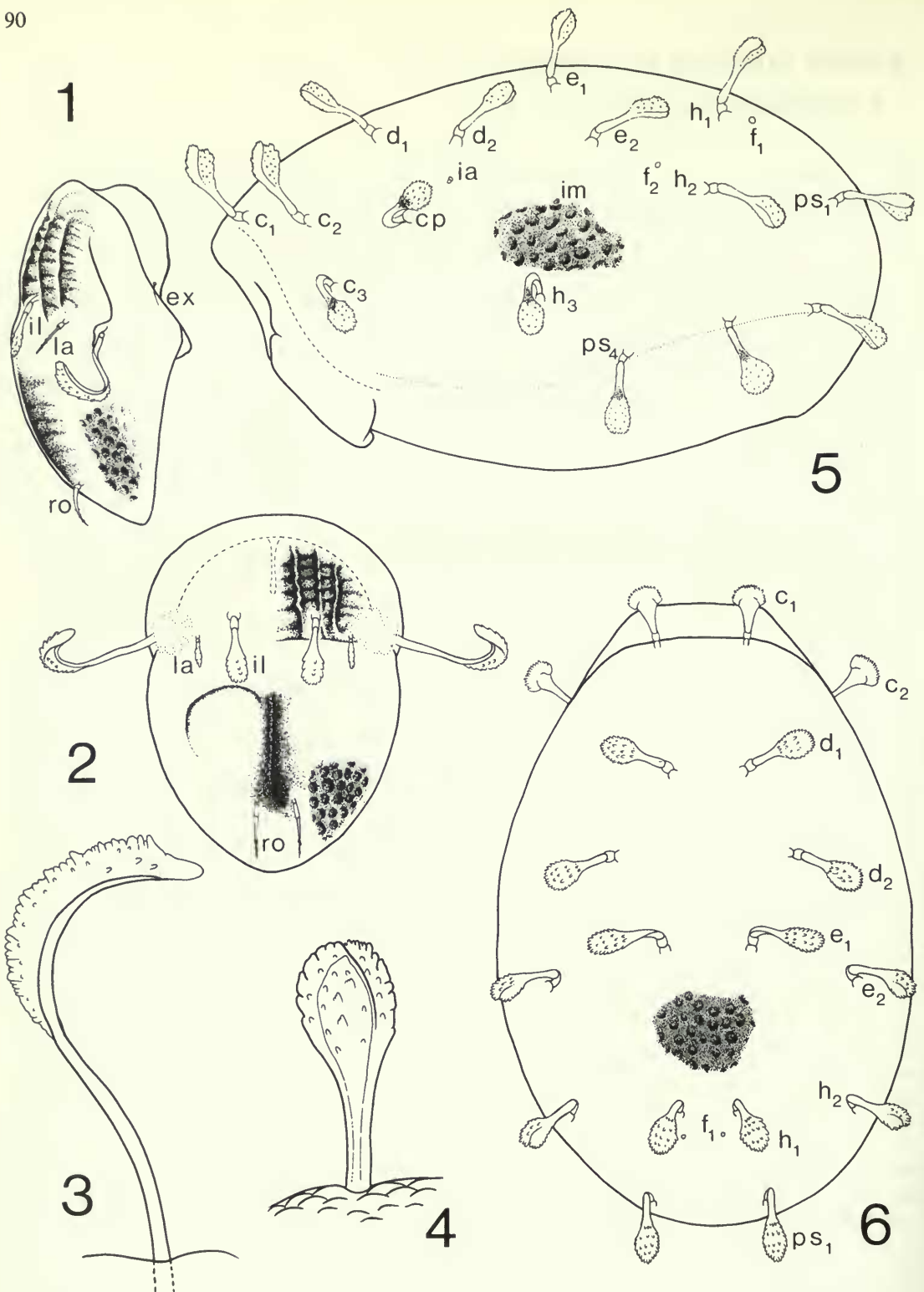
Family PHTHIRACARIDAE Perty, 1841

### *Hoplophorella spatulata* sp. nov.

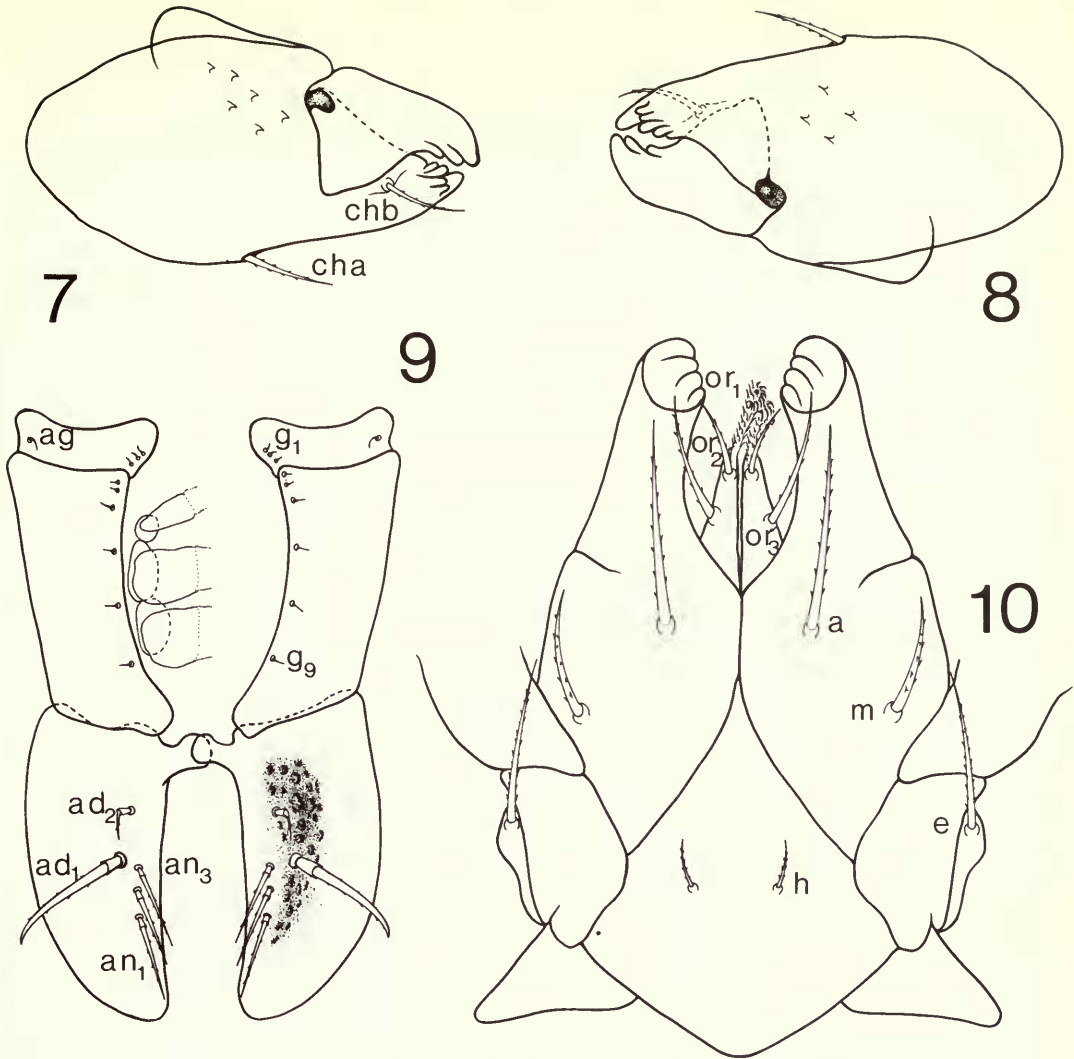
*Aspis* (Figs 1–3): 180–185  $\mu\text{m}$  long and with a maximum width of 130–140  $\mu\text{m}$ . All the dorsal setae are serrated and procumbent. The lamellar (*la*) and rostral setae (*ro*), approximately 20  $\mu\text{m}$  and 30  $\mu\text{m}$  in length respectively, are rather stout while the interlamellars (*il*) are broadly spatulate and about 30  $\mu\text{m}$  in length. There is a prominent median keel in front of the *il-la* setae and posteriorly the prodorsal integument is raised into a number of longitudinal and transverse ridges. The sensilli, 55–70  $\mu\text{m}$  in length, are membranous and serrated distally, while the basal portion is slender and distinctly cranked. A number of finger-like tracheoles are associated with each bothridium and there is a single pair of short, smooth exobothridial setae (*ex*). The prodorsal integument is coarsely pitted.

*Notogaster* (Figs 4–6): 300–340  $\mu\text{m}$  in length along a line through  $c_1-ps_1$ , and with a greatest depth of 210–220  $\mu\text{m}$ . There are 15 pairs of setae, all of which are short (less than the distance  $c_1-d_1$ ), spatulate and serrated. The seta  $c_1$  is situated on the posterior margin of the collar and setae  $c_{2-3}$  submarginally. The fissures *ip* and *ips* are absent while vestigial  $f_1$  is located just below seta  $h_1$  and  $f_2$  between  $h_1$  and  $h_2$ . The notogastral integument is coarsely pitted.

*Ano-genital region* (Fig. 9): There are three pairs of marginal anal setae ( $an_{1-3}$ ) and two pairs of adanals ( $ad_{1-2}$ ) located submarginally. Setae  $an_{1-3}$  are all moderately stout, serrated and approximately equal in length. The anterior pair of adanal setae ( $ad_2$ ) are short and fine while the posterior pair, approximately 55  $\mu\text{m}$  in length, are rather stout and taper to a fine point. Both pairs of adanal setae are weakly serrated. In lateral aspect the paraxial margins of the anal plates are strongly convex and thus rather prominent. There are nine pairs of genital setae ( $g_{1-9}$ ) and a single pair of aggenitals (*ag*). The latter are located antiaxially in the genital furrows. All the genital setae are short and marginal, the anterior five setae ( $g_{1-5}$ ) being inserted more closely together than the posterior four ( $g_{6-9}$ ). There are three pairs of genital papillae, the anterior pair being rather small. The integument of the ano-genital region is coarsely pitted with the exception of the non-setal bearing areas of the anal plates which have no distinct ornamentation.



Figs 1-6 *Hoplophorella spatulata*: (1) aspis, lateral; (2) aspis, dorsal; (3) sensillus; (4) notogastral seta; (5) notogaster, lateral; (6) notogaster, dorsal.

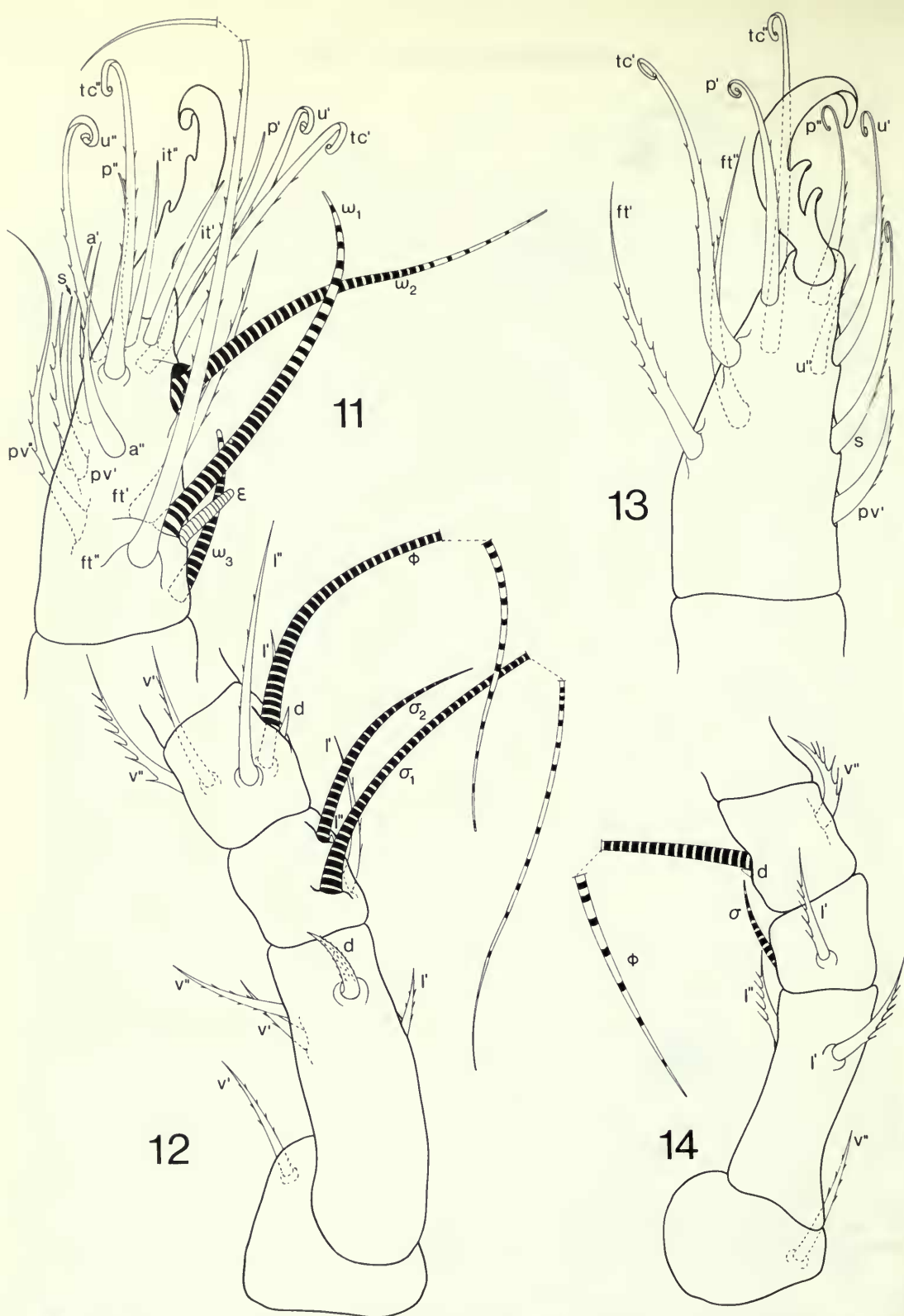


**Figs 7–10** *Hoplophorella spatulata*: (7) chelicera, antiaxial; (8) chelicera, paraxial; (9) anogenital region; (10) infracapitulum.

**Infracapitulum** (Fig. 10): This is typically pthiracaroid in form (see for example, Parry, 1979). There are three pairs of adoral setae, the anterior pair ( $or_1$ ) being brush-like distally and the posterior two pairs serrated. All the infracapitular setae ( $a$ ,  $m$  and  $h$ ) are strongly serrated, the median ( $m$ ) and posterior ( $h$ ) pairs being somewhat shorter than in species of *Pthiracarus* and *Steganacarus*. Laterally there is a single pair of barbed supracoxal setae ( $e$ ).

**Chelicerae** (Figs 7, 8): The movable digit has three teeth and the fixed digit carries five. There are about six short conical spines on the antiaxial surface of the principal segment and about three sharply pointed spines paraxially. Setae  $cha$  and  $chb$  are both serrated,  $cha$  being somewhat longer than  $chb$ . The cheliceral integument is finely punctate.

**Legs** (Figs 11–14): The solenidial and setal formulae for the legs are I (2–1–3) and (1–4–2–5–16–1); II (1–1–2) and (1–3–2–3–12–1); III (1–1–0) and (1–2–1–2–10–1); IV (0–1–0) and (2–1–1–2–10–1). All the solenidia are long and straight. On tarsus I solenidion  $\omega_2$  has a small distal coupling seta; its form can only be seen clearly in scanning electron micrographs. On tibia I the dorsal seta coupled with solenidion  $\phi$  is relatively long and prominent but on



Figs 11 & 12 *Hoplophorella spatulata*, postero-lateral aspect of leg I: (11) tarsus; (12) tibia to trochanter.

Figs 13 & 14 *Hoplophorella spatulata*, antero-lateral aspect of leg III: (13) tarsus; (14) tibia to trochanter.

tibiae II–IV it is much shorter. The solenidion  $\sigma_2$  on genu I is coupled with a reduced posterolateral seta. On all four legs the setal arrangement closely resembles that found in other phthiracaroid genera. Setae (*tc*) and (*u*) on tarsus I and (*tc*), (*u*), (*p*) and *s* on tarsi II–IV are covered with whorls of sharply pointed spicules in the middle third. Such an arrangement of spicules has been observed in two other phthiracaroid genera, namely *Phthiracarus* (Parry, 1979) and *Steganacarus* (Parry, 1978) but the spicules here are rather blunt. Seta *d* on femora I–III is thickened and densely serrated, the serrations being sharply pointed. On tarsi III and IV seta *u''* is short, thick and resembles a eupathidium, while seta *u'* is long, simple and hooked distally (this condition has also been observed in species of *Phthiracarus*).

**MATERIAL:** Holotype, from moist moss on trunk of *Samanea saman*, Bogor's Botanical Garden, Java, deposited in the collections of the Zoological Museum of the University of Copenhagen. Paratype, BMNH reg. no. 1979.4.6.1, from the above locality. The material was collected by Dr Marie Hammer, 30 January, 1974.

**REMARKS:** *Hoplophorella* was proposed by Berlese (1923) as a subgenus of *Phthiracarus*, with *Phthiracarus* (*Hoploph.*) *cucullatus* (Ewing) as type. The following diagnosis was later published by Jacot (1933) who regarded *Hoplophorella* as a separate genus: 'The chitin is usually areolated or otherwise sculptured, and the anal covers are strongly convex, thus protruding beyond the ventral plate and [the] line of genital covers. The anal covers bear only three, subequally spaced bristles on median edge.' In relation to the first two characters, *Hoplophorella* has obvious affinities with *Steganacarus* and *Tropacarus* and the only diagnostic feature of the genus appears to be the chaetotactic pattern of the anal setae. Van der Hammen (1959) suggested that the presence of a notogastral hood could provide an alternative basis for separating *Hoplophorella* from other Phthiracaridae, but since this character is evident in less than half the known species of the genus, and while a hood closely approaching the condition in *Hoplophorella* is found in species of *Steganacarus* and *Tropacarus*, this cannot be diagnostic for *Hoplophorella*. Moreover, the results of Sheals' (1969) numerical analysis of the Phthiracaroida confirm that *Hoplophorella* is neither a very 'natural' nor a distinctive genus. The leg chaetotaxy, at least in *H. spatulata*, closely resembles the condition found in the rest of the Phthiracaroida (see Parry, 1979) but unfortunately there is no information available on the pattern and numbers of setae in other described species of *Hoplophorella*.

It would appear that *H. spatulata* bears a somewhat unusual form of notogastral seta for, although spatulate setae have been described in other species of the genus (for example, *H. cucullata*) these are smooth and not densely serrated as in the species from Java. Moreover, the nature of the prodorsal integument presents another unusual feature for, in addition to a number of longitudinal ridges, *H. spatulata* possesses a series of transverse ridges, thus giving a 'lattice' effect to the integument posterior to setae *il-la*.

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